

METADATA

Title: Non-Destructive and Spectroscopic Methods of Examination of Materials

Other Titles: Theory, techniques and applications

Language: Greek

ISBN: 978-960-603-498-5

Subject: ENGINEERING AND TECHNOLOGY, NATURAL SCIENCES AND AGRICULTURAL SCIENCES

Keywords: Non Destructive Testing / Infrared Thermography / Ultrasound Testing / Ground Penetrating Radar / Attenuated Total Reflectance-fourier Transform Infrared Spectroscopy

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Bibliographic Reference: Koui, M., Avdelidis, N., Theodorakeas, P., & Cheilakou, E. (2015). Non-Destructive and Spectroscopic Methods of Examination of Materials [Undergraduate textbook]. Kallipos, Open Academic Editions. http://dx.doi.org/10.57713/kallipos-445

Abstract

In recent years, the application of Non-Destructive Testing (NDT) techniques has become widespread in many areas of engineering. The main factor contributing to the spread and establishment of these techniques is their fundamental advantage of allowing the physical condition of an object to be examined without affecting its future usefulness, thus determining the absence or presence of conditions that affect its functionality. The content of this book presents some of the most widely used NDT techniques, providing the reader with a comprehensive description of their basic operating principles and a detailed presentation of their practical applications, thus leading to a better understanding of how they can be applied in non-destructive inspections of materials and structures. Based on the above description, after the first general introductory chapter (chapter 1), in which the reader

is introduced to the concept of NDT, seven chapters follow, presenting the following: the theoretical background, operating principle, experimental setups, and practical applications of infrared thermography (chapter 2), ultrasonic testing (chapter 3), georadar (chapter 4) and spectroscopic methods of diffuse reflection spectroscopy in the ultraviolet, visible and near-infrared spectrum (UV-VIS-NIR) with optical fiber (FORS) (chapter 5), X-ray fluorescence spectroscopy (XRF) (chapter 6), Fourier transform infrared spectroscopy with attenuated total reflection (ATR-FTIR) (chapter 7) and RAMAN spectroscopy (chapter 8). The description and analysis of the above techniques is accompanied by the presentation of their experimental implementation in video files, from which the reader can form a complete picture of how they are applied and the process of retrieving information in real time.



The Project is funded by the National Development Programme 2021-2025 of the Ministry of Education and Religious Affairs and implemented by the Special Account for Research Funds of the National Technical University of Athens and the Hellenic Academic Libraries Link.

